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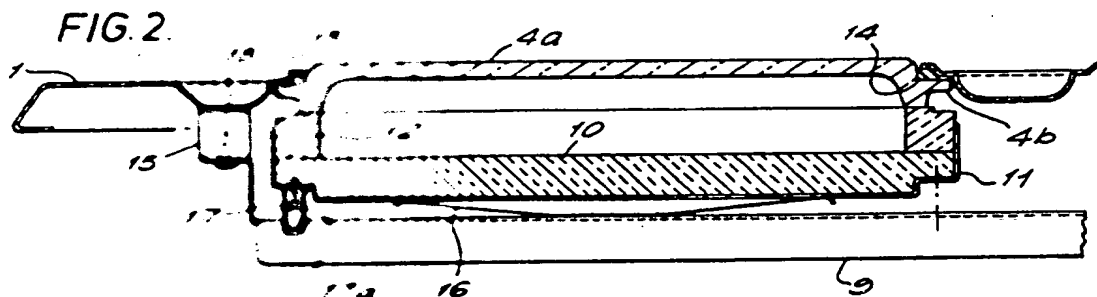
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GB 1367815 A EP 0101002 A2

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(54) Electric hobs

(57) In an electric hob, the ceramic glass disc 4a of each hot plate unit has a peripheral region 4b which is overlapped by the rim of the respective opening in the hob surface 1, and the hot plate unit is resiliently urged towards the hob surface by means of a pair of metal springs 16 arranged at right angles to one another. This facilitates assembly, while providing some protection for the ceramic disc from shock loads.



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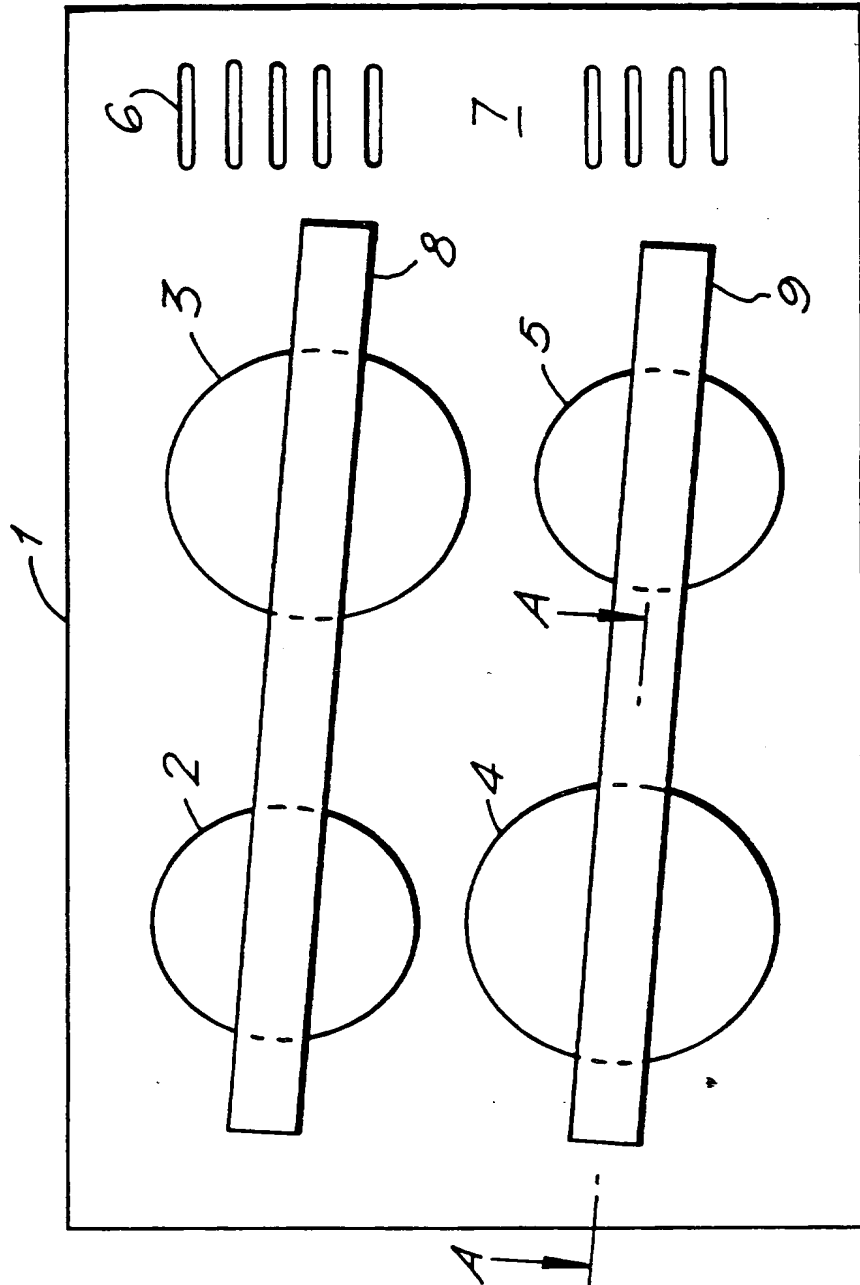
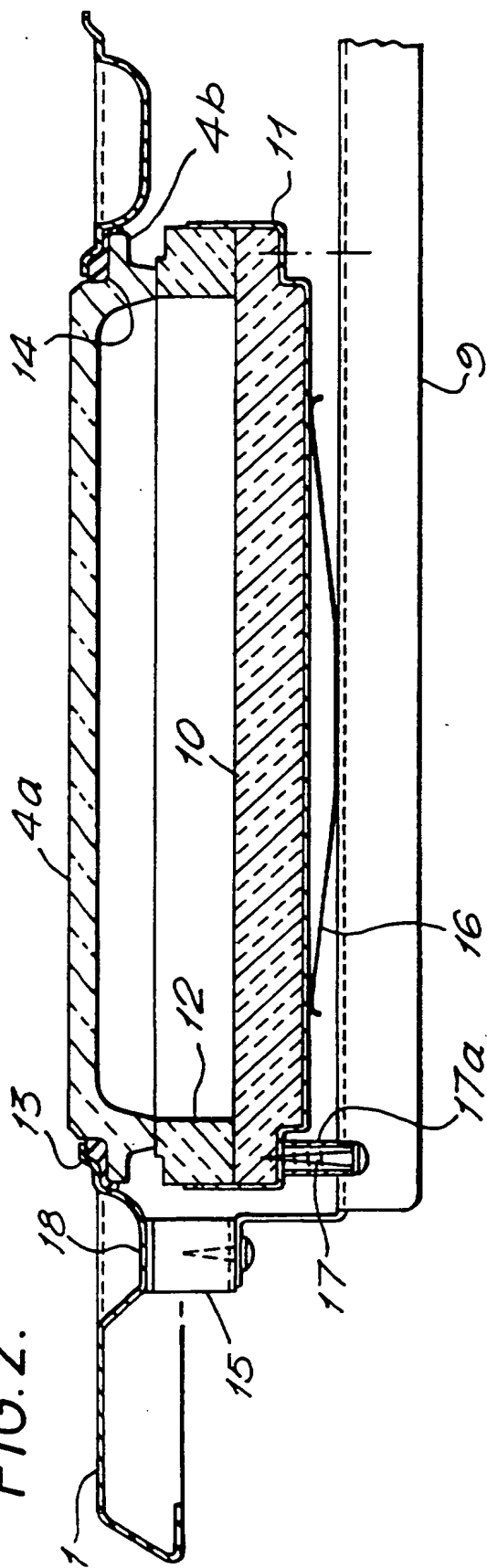


FIG. 1.

FIG. 2.



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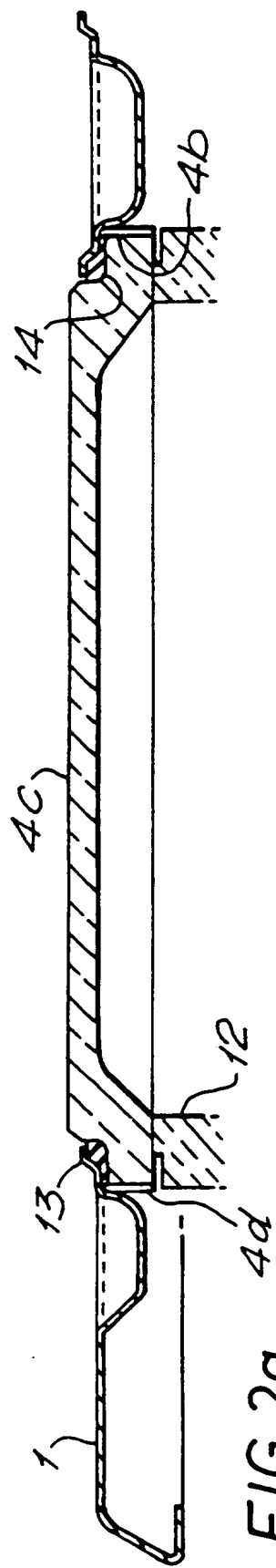


FIG. 2a.

ELECTRIC HOB

This invention relates to electric hobs.

A popular design of electric hob utilises cast iron hot plates set into a hob pressing. Whilst for cosmetic reasons and for ease of cleaning, hob surfaces composed entirely of ceramic glass have been introduced, the use of ceramic glass disc-shaped inserts has now been
5 proposed for use with metal hob pressings in place of the cast iron hot plate units (GB-A-2 138 935 and 2 177 578).

The invention provides an electric hob comprising a hob surface, a ceramic glass disc
10 extending across an opening in the hob surface with a peripheral region of the ceramic glass disc lying beneath the rim of the opening, a heater positioned beneath the ceramic glass disc, and resilient means arranged so that the ceramic glass disc is resiliently urged towards the rim of the hob surface.

15 Because the rim of the opening in the hob overlaps the ceramic glass disc, it is possible to assemble the hob entirely from the underside of the hob surface, making the assembly process easier. Any shock loading on the ceramic glass e.g. due to a pan being dropped, is at least partly taken up by the resilient means, reducing the chances of accidental damage to the ceramic glass disc.

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An electric hob constructed in accordance with the invention will now be described, by way of example, with reference to the accompanying drawings, in which:

Figure 1 is a plan view of the underside of the hob;

Figure 2 is an axial section (indicated by lines A-A in Figure 1) through one of the hot plates of the hob of Figure 1, but to a larger scale; and

5

Figure 2a shows a fragmentary view of a hob plate with an alternative form of ceramic glass disc.

Like parts are given like reference numerals throughout the Figures.

10

Referring to Figure 1, the hob comprises a metal pressing 1 forming a hob surface and hot plate units 2 to 5. The hot plate units 2 and 5 are of a smaller size than the hot plate units 3 and 4. Louvres 6 permit ventilation of the region beneath the hob, and the controls for the hot plates are positioned in the region 7 but on the top surface of the hob.

15 Alternatively, the louvres may be omitted, and the controls may be provided on a separate control panel.

The hot plate units 2 to 5 are secured to the hob surface 1 by means of support straps 8 and 9.

20

Referring to Figure 2, each heater consists of a heater element (not shown) supported on a base 10 of thermally and electrically insulating (e.g. ceramic) material which is contained in a metal canister 11 and is surrounded by a spacer ring 12 of thermally and electrically insulating material, on which the respective ceramic glass disc 4a is supported. The

heating element may be a coiled wire heating element as disclosed, for example, in GB-A-2 138 935 or 2 177 578. Such an element may be used on its own, or may be supplemented by one or more tungsten halogen lamps.

- 5 The lower surface of the ceramic glass disc is provided with a number of location points (not shown) which fit in corresponding depressions in the support ring 12.

10 An alternative form of ceramic glass disc 4c is shown in Figure 2a, in which the circumference of the disc is provided with a number of location ridges 4d which locate the disc with the respective openings in the hob pressing 1. The spacer ring 12 and the other parts of the hob would however remain the same.

15 The respective ceramic glass discs 4a, 4c have a peripheral flange 4b which is overlapped by the rim 13 of the respective opening in the hob pressing 1. This permits the hot plate unit to be assembled from underneath the hob pressing. The space between the flange 4b and the rim 13 is filled with a sealant, for example an extruded foam silicon rubber 14.

20 Pairs of hot plate units 2, 3 and 4, 5 are together secured in position by respective support straps 8, 9, which are secured to the hob pressing 1 by brackets at each end. Only the left hand bracket 15 for the support strap 9 is shown in Figure 2. It will be noted from Figure 2 that the support straps are of channel shape. The hot plate units are resiliently urged towards the rim of the hob pressing by means of a pair of metal springs 16, arranged at right angles to each other. Only one is shown in Figure 2; the one at right angles is not illustrated. The hot plate units are additionally located by means of locator screws (or pins)

17 surrounded by ferrules 17a at each end (only that for the left hand end being shown) which are secured into pre-formed apertures at the end of the canister 11.

5 All the hot plate units are of similar construction, similar to the hot plate unit 4 shown in Figure 2. The hob pressing 1 has a circular drip region 18 surrounding each of the hot plate units.

The assembly is as follows. The extruded foam silicon rubber 14, which is backed with an adhesive strip, in the form of a ring, is placed around the periphery of the ceramic disc 4a or 4c. The disc and seal assembly is then positioned into the respective opening in hob pressing 1. In the case of the disc 4c, the location ridges 4b on the disc centralise the assembly in the opening in the hob pressing. Location pins or screws 17 surrounded by ferrules 17a are secured into pre-formed apertures of canister 11 so as to project from the canister. Canister assembly 11 consisting of pre-assembled base 10, support ring 12 and location pins or screws 17 with ferrules is centralised onto the underside of disc 4a, 4c with the location points on the underside of the disc engaging with the recesses in the support ring. The canister assembly is rotated about its axis until the ferrules surrounding the locator pins or screws align with apertures in the support strap 9 which have the metal springs 16 attached. This is done for both hot plate units for each support strap 8 or 9. Finally, the respective pairs of heater assemblies are pressed towards the respective openings in the pressing 1, and the support straps 8 and 9 are secured to the hob brackets 15.

The construction has a number of advantages. Firstly, the assembly can be carried out entirely from the underside of the hob pressing. This is a particular advantage in that each heater is provided with a limiter (not shown) in the conventional way, and the limiter consists of a glass rod of narrow diameter which extends right across the width of the heater and projects a little beyond its end. The limiter does not have to pass through the opening at all in the assembly process. Secondly, in the event that a heavy object e.g. a pan is dropped on the ceramic glass disc 4a, the shock is partly taken up by the springs 16, and so damage to the ceramic glass disc 4a is minimised.

10 Suitable materials for the ceramic material are micro-porous fumed silica mixed with ceramic or glass fibre and titanium zircon or other suitable oxide for binding; and for the ceramic glass disc are lithium aluminium silicate or magnesium aluminium silicate, with titania or phosphate added to the basic material as a nucleating agent to initiate the formation of the crystals, which are then grown by treating with controlled heat. Such
15 ceramic glass has low thermal expansion, giving good resistance to thermal shock.

Of course variations may be made without departing from the scope of the invention. Thus, instead of the silicon rubber 14 being in the form of a pre-formed ring, it could be wound around the ceramic disc 4a in a strip, or could, for that matter, be placed as a ring
20 or wound as a strip around the interior of the rim 13. Further, ptfe could be used instead of silicon rubber. Different forms of spring 16 are possible. The location points on the underside of the discs 4a, 4c together with the recesses in the ring 12 are optional. Further, different components could be used in place of the screws/pins 17 and ferrules 17a. Finally the invention is applicable to any number of hot plate units, whether on a separate hob or
25 on a cooker.

CLAIMS

1. An electric hob comprising a hob surface, a ceramic glass disc extending across an opening in the hob surface with a peripheral region of the ceramic glass disc lying beneath the rim of the opening, a heater positioned beneath the ceramic glass disc, and resilient means arranged so that the ceramic glass disc is resiliently urged towards the rim of the hob surface.
2. An electric hob as claimed in claim 1 in which the resilient means is positioned between the underside of the heater and a support strap secured to the underside of the hob.
3. An electric hob substantially as herein described with reference to the accompanying drawings.
4. An electric hob as claimed in any one of claims 1 to 3, in which the hob forms part of a free-standing cooker.

Patents Act 1977**Examiner's report to the Comptroller under Section 17
The Search report)**Application number
GB 9421024.2**Relevant Technical Fields**

- (i) UK Cl (Ed.M) F4W
(ii) Int Cl (Ed.5) F24C 15/10

Search Examiner
M C MONKDate of completion of Search
6 DECEMBER 1994**Databases (see below)**

- (i) UK Patent Office collections of GB, EP, WO and US patent specifications.

Documents considered relevant
following a search in respect of
Claims :-
ALL

- (ii) ONLINE DATABASE: WPI

Categories of documents

- X:** Document indicating lack of novelty or of inventive step. **P:** Document published on or after the declared priority date but before the filing date of the present application.
- Y:** Document indicating lack of inventive step if combined with one or more other documents of the same category. **E:** Patent document published on or after, but with priority date earlier than, the filing date of the present application.
- A:** Document indicating technological background and/or state of the art. **&:** Member of the same patent family; corresponding document.

Category	Identity of document and relevant passages	Relevant to claim(s)
X	GB 1367815 (GENERAL ELECTRIC) spring brackets 55, 62	1, 4
X	EP 0101002 A2 (KARL FISCHER) 22.02.84 spring 48, and also WPI Abstract Accession No: 84-050680/09	1, 4

Databases: The UK Patent Office database comprises classified collections of GB, EP, WO and US patent specifications as outlined periodically in the Official Journal (Patents). The on-line databases considered for search are also listed periodically in the Official Journal (Patents).